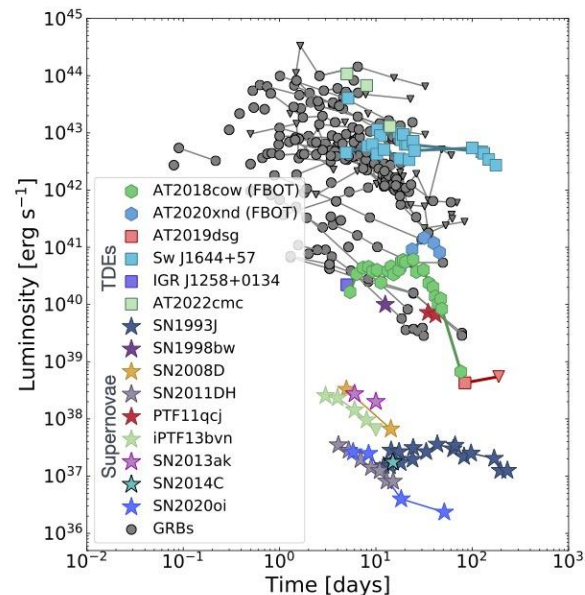


Single dish submm transient sources

Peel, Clements, Mroczkowski, Foster / AtLAST - arXiv:2512.13924



- Submm sky largely unknown - now possible to explore!
- Large CMB telescopes - ACT / SPT / Simons Observatory - capable of detecting submm transients with repeated wide-area scans with >10,000 detectors at 30-300GHz
- Many transients only detectable at submm - see Karri Koljonen's talk for the science!
- A large submm telescope like AtLAST could:
 - Detect new transients through surveys
 - Rapidly follow up of transients detected elsewhere (submm, LSST, neutrinos, gravitational waves, ...!)



Light curves of various extragalactic transients (SNe, GRBs, TDEs and FBOTs) at millimetre wavelengths, from Eftekhari et al. (2022)

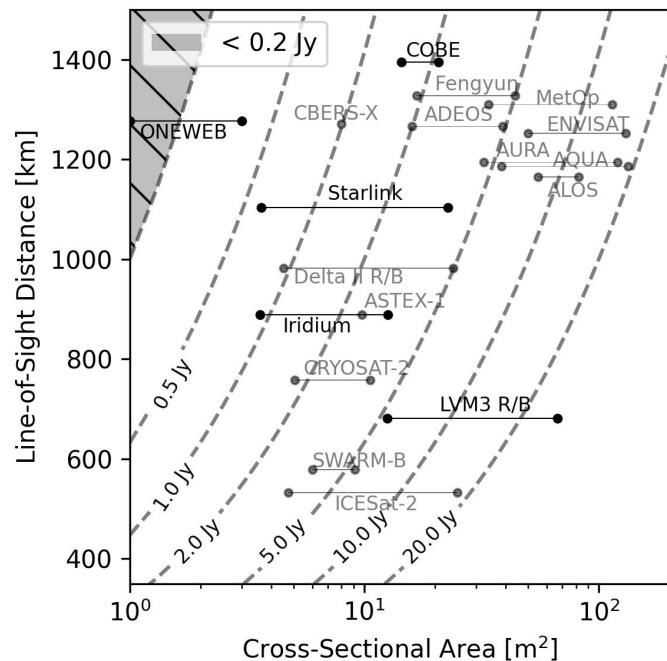


Single dish submm transient sources

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- Satellites reflect optical light, transmit radio, and emit thermally in submm - can mimic astronomical transients
- Already >15,000 satellites, maybe millions coming soon
- South Pole Telescope observations show these are readily observable at submm (ACT/SO coming soon - more satellite pass over Atacama than the poles)
- Need to understand and minimise impacts of satellites at submm, but also across all of astronomy
- Please join IAU Centre for the Protection of the Dark & Quiet Sky! cps.iau.org



Predicted thermal emission from satellites
based on distance and apparent size.
From Foster et al. (2025).

